VITALMAX 530

PULSE OXIMETER

SERVICE MANUAL

CAUTION: Federal law (U.S.) restricts this
device to sale by or on the order of a physician.

PaceTech™ Medical Monitors Inc.

...Excellence in Patient Monitoring

510 Garden Avenue N. Clearwater, FL 33755-4126
Phone: (727) 442-8118 • Fax: (727)443-7257

Rev. 3 2/99

SECTION 1 – INTRODUCTION…….. 1

A. General Description …… 1-2
B. Symbols Chart … …….. 1-2
C. Cautions…. …… 1-3
D. Confirming Code …… 1-3

SECTION 2 – CONTROLS AND CONNECTORS …… 2

A. Front Panel ……. 2-1
B. Rear Panel …….. 2-2

SECTION 3 – DIAGRAMS ……..……. 3

A. Vitalmax 530 Block Diagram……..…… 3-1
B. Vitalmax 530 Block Diagram Description …… 3-2
C. Vitalmax 530 Hardwire Diagram..…….. 3-4

SECTION 4 – MAIN BOARD (701-060-521)…… 4

A. Schematic – Main Board…. ……... 4-1
B. Schematic – Power Section…… ……. 4-2
C. Main Board Component Layout …… 4-3
D. Main Board Parts List …… 4-4

SECTION 5 – SP02 BOARD (703-002-003).……. 5

A. Schematic – BCI Sp02 Board (703-002-003)..…… 5-1
B. BCI Sp02 Board Component Layout ……..…… 5-6
C. BCI Sp02 Board Parts List ……..…… 5-8

SECTION 6 – 530 DISPLAY and DRIVER BOARD.…… 6

A. 530 Display Board Schematic (701-058-521).…… 6-1
B. 530 Display Board Component Layout..……..…… 6-2
C. 530 Display Board Parts List…….…… 6-3
D. 530 Display Driver Board Schematic (701-059-521)……. 6-4
E. 530 Display Driver Board Component Layout……..……. 6-5
F. 530 Display Driver Board Parts List……..…….. 6-6

SECTION 1 - INTRODUCTION

FOREWARD

This Service Manual has been prepared as a guide for the repair of the VITALMAX 530 monitors by trained and technically qualified technicians only. It contains performance specifications and information for the routine operation and maintenance of the equipment.

NOTE

Unauthorized servicing may void the remainder of the warranty. Check with the factory or with a local authorized *Pace Tech* representative to determine the warranty status of the equipment.

Further questions regarding technical and service information should be directed to the Customer Service Department at:

PACE TECH, INC.
510 Garden Avenue North,
Clearwater, Florida 33755-4126 USA
Phone: (800) 722-3024 . (727) 442-8118
Fax: (727) 443-7257

E. Email: pacetech-med.com

A. GENERAL DESCRIPTION

The ***Vitalmax 530*** monitor combines all the features of a pulse oximetry patient monitor in one compact unit.

The ***Vitalmax 530 monitor*** is intended for use by persons trained in professional health care to measure and monitor the following parameters:

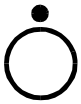
- Blood oxygen saturation (SpO_2 or Pulse oximetry)
- Pulse (SpO_2) signal strength
- Pulse rate (SpO2)

Additional options offered are:

- Add-on 27 column thermal printer

B. SYMBOLS CHART

The following symbols are used on the monitors to mark equipment functions and/or features.

Symbol	Description	Symbol	Description
	On - only for a part of the equipment		Attention, consult accompanying documents
	Off - only for a part of the equipment; battery will continue to charge even if power is turned "off."		Contains lead-acid battery, please dispose of properly in recycle container. Do not incinerate or throw in the trash.
	Type B Equipment provides a particular degree of protection against electric shock, especially regarding the following: 1. allowable leakage current 2. reliability of the protective earth connection (if present).		Adjust sound volume
			Fuse information

C. CAUTIONS

- *Indicate a condition that may lead to equipment damage or malfunction.*

⚠ The monitor is intended to be operated from a main power source of nominally 110-120V/50-60 Hz or 220-240V/50-60 Hz AC through the external AC adapter or from the internal 6 Volt battery.

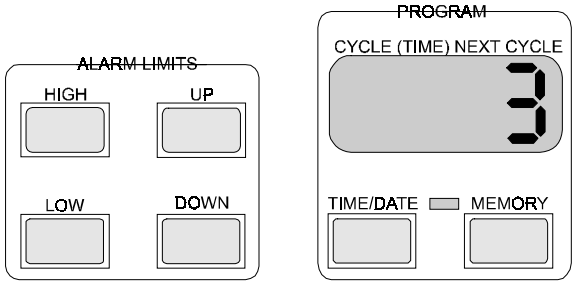
⚠ Do not autoclave, ethylene oxide sterilize, or immerse the monitor in liquid. Unplug the monitor before cleaning or disinfecting.

D. CONFIRMING THE CODE FOR NORMAL OPERATION

The installation code for the software configuration of the digital monitors indicates the functions of that particular model. This code is displayed in the ***NEXT CYCLE*** display.

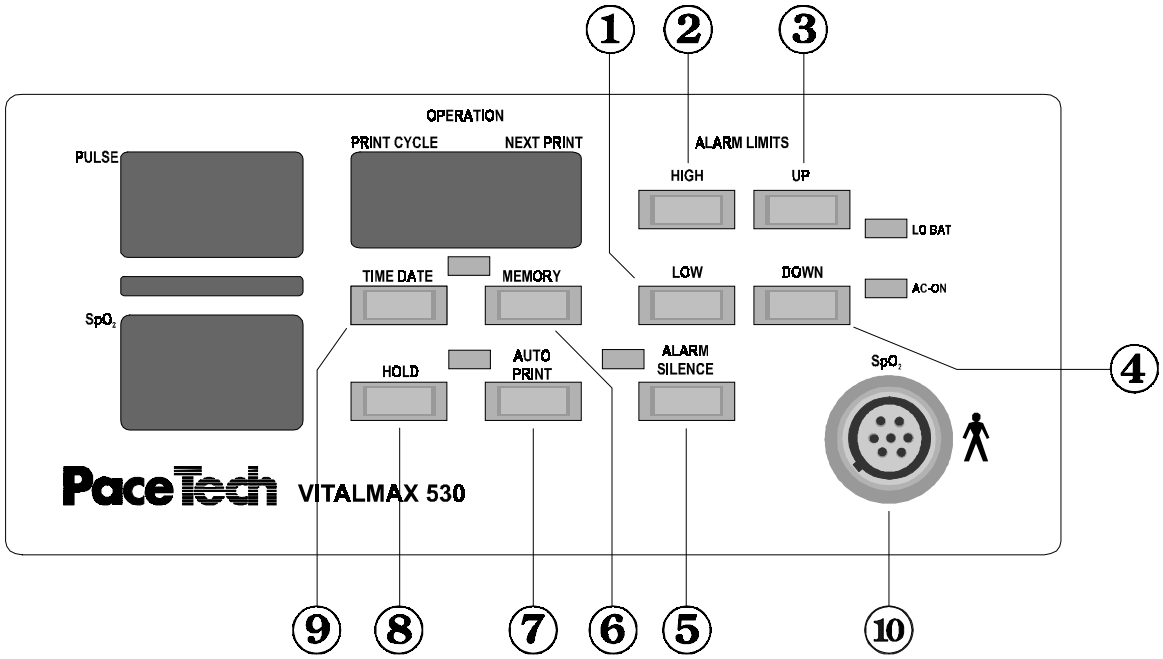
To confirm that the monitor has the correct installation codes for normal operation follow these procedures:

1. Turn the power on.
2. Simultaneously press and hold the ***MEMORY RECALL*** and the ***TIME/DATE*** pushbutton for approximately three (3) seconds or until you hear a "beep" sound and the number in the ***NEXT CYCLE*** display changes. This new number is the software configuration code of the monitor. Verify the code is set at two (2).



3. Press the ***TIME/DATE*** pushbutton once. A number will be displayed in the **PULSE** display window. This is the printer code. Verify the code is set at three (3).
4. To resume normal operation:
   Press the ***MEMORY RECALL*** pushbutton twice and the monitor will immediately resume normal operation.
   OR
   Wait ten (10) seconds and the monitor will automatically resume normal operation.

   NOTE: The codes are preset at the factory and cannot be changed.



Front Panel

1. LOW This pushbutton will display the previously programmed lower alarm limits.

2. HIGH This pushbutton will display the previously programmed upper alarm limits.

3. UP This pushbutton will:
- increase the alarm limits, print cycle time, alarm reset interval, time and date, or initiate the memory recall in ascending order.

4. DOWN This pushbutton will:
- decrease the alarm limits, print cycle time, alarm reset interval, time and date, or initiate the memory recall in descending order.

5. ALARM SILENCE

This pushbutton will:
- silence the alarms for a selected period of time, or
- program the automatic alarm reset interval.

6. MEMORY This pushbutton will recall previous readings in the memory while monitoring in the ***Auto*** or ***Stat*** modes.

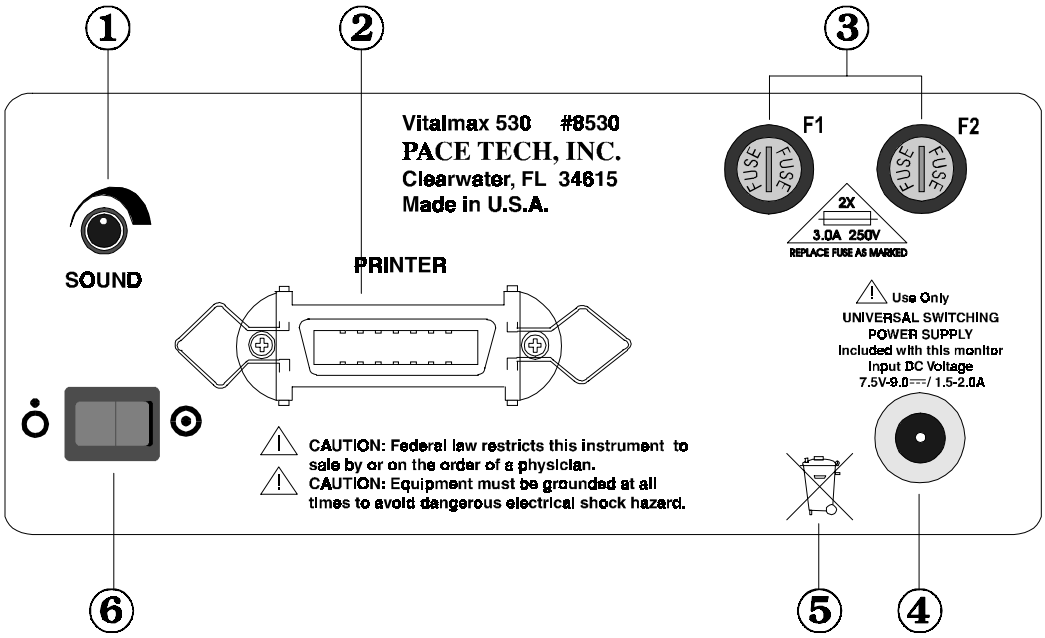
7. AUTO PRINT This pushbutton places the monitor in ***Auto Print*** mode of operation. Repeated readings will be printed at desired set intervals of time.

8. HOLD This pushbutton places the monitor on ***HOLD*** and aborts the ***Auto Print*** mode. The **PRINT CYCLE** and **NEXT PRINT** LED displays will blink as long as the monitor is on ***Hold***.

9. TIME / DATE This pushbutton allows viewing and setting of the time and date.

10. SpO2 RECEPTACLE
This receptacle accepts the pulse oximetry extension cable plug.

Rear Panel



1. SOUND This control knob adjusts the volume of the pulse sounds: turning the knob clockwise will increase the volume: turning the knob counterclockwise will decrease the volume. This knob does not adjust the audio alarm.

2. PRINTER This receptacle provides parallel signal lines to the optional add-on 27 column thermal printer.

3. FUSE HOLDERS
The monitor is equipped with two fuses designated F1 and F2, each protecting a different power input:

F1 – This fuse protects the internal battery. If it is blown, the monitor can continue to operate on the AC power supply. Battery operation is not possible until the fuse is replaced.

F2 – This fuse protects the AC power supply line. If it is blown, the monitor can continue to operate under battery power. However, the internal battery cannot be recharged until this fuse is replaced.

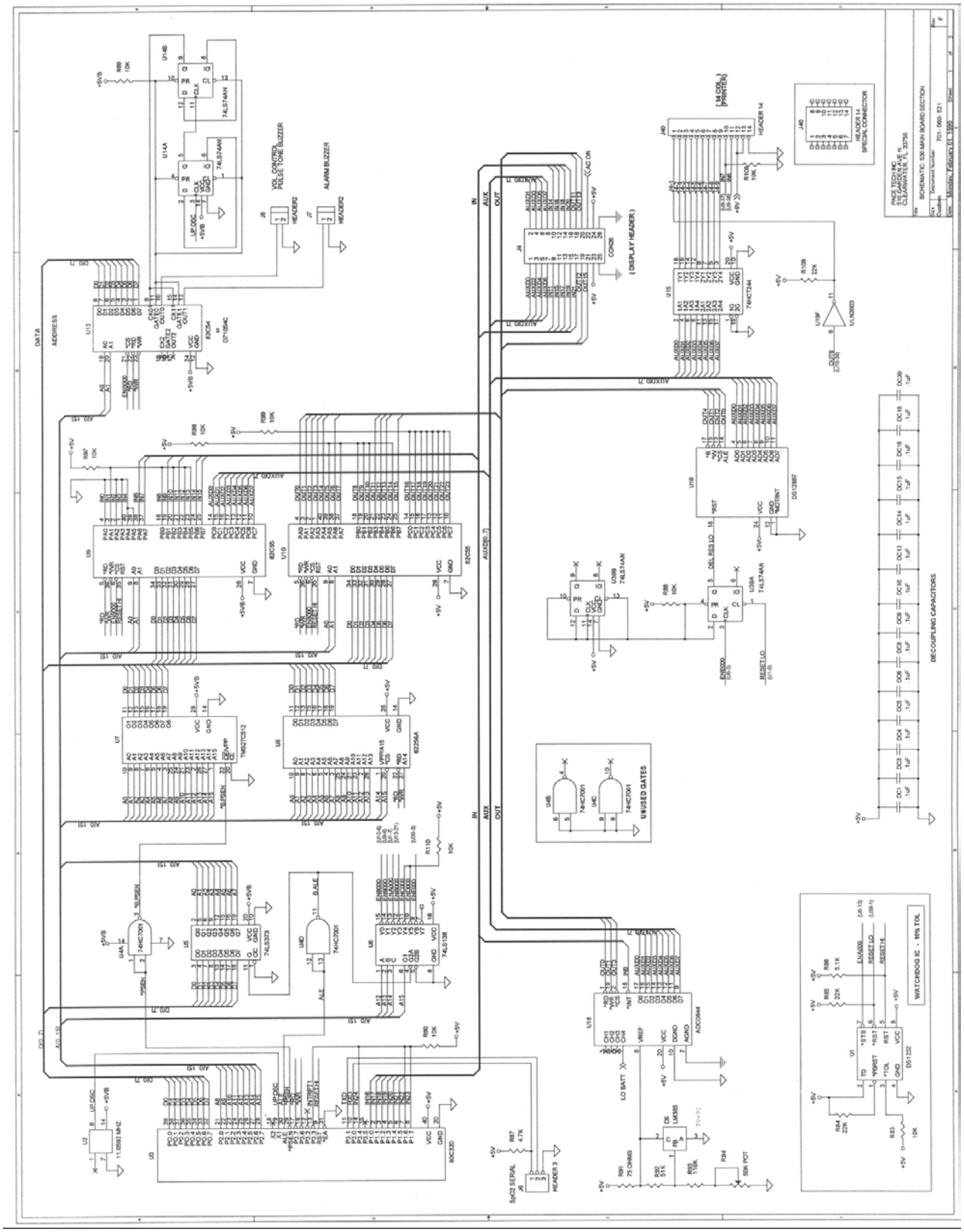
4. AC ADAPTER This receptacle accepts the AC adapter used for continous AC operation or to charge the internal battery.

5. BATTERY DISPOSAL SYMBOL

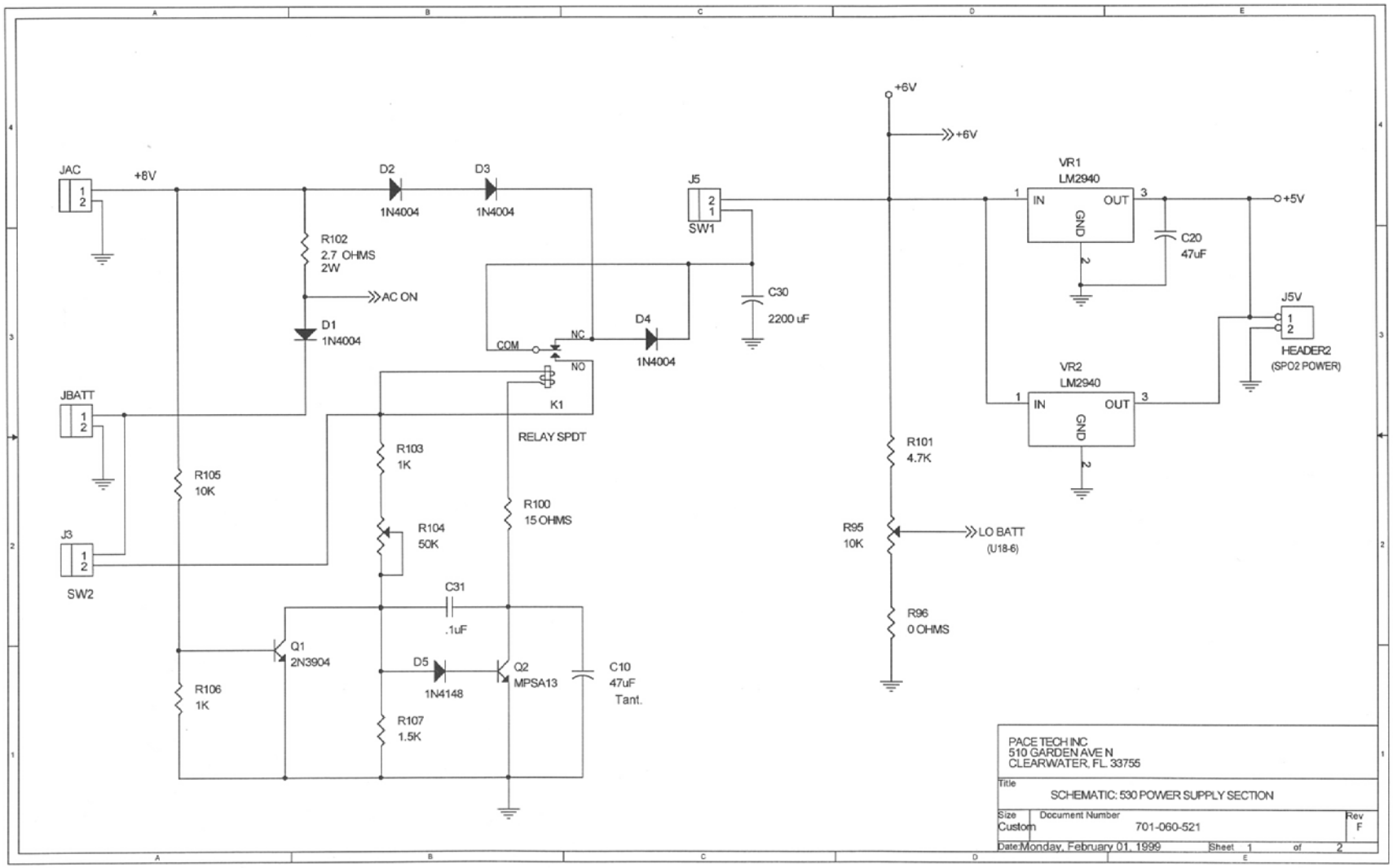
"Contains lead-acid battery; please dispose properly in recycle container. Do not incinerate or throw in the trash."

6. POWER This toggle switch turns the power from "on, " to "off, ."
The monitor will continue to charge the battery as long as the power supply is plugged in, even if the power switch is in the "off" position**.**

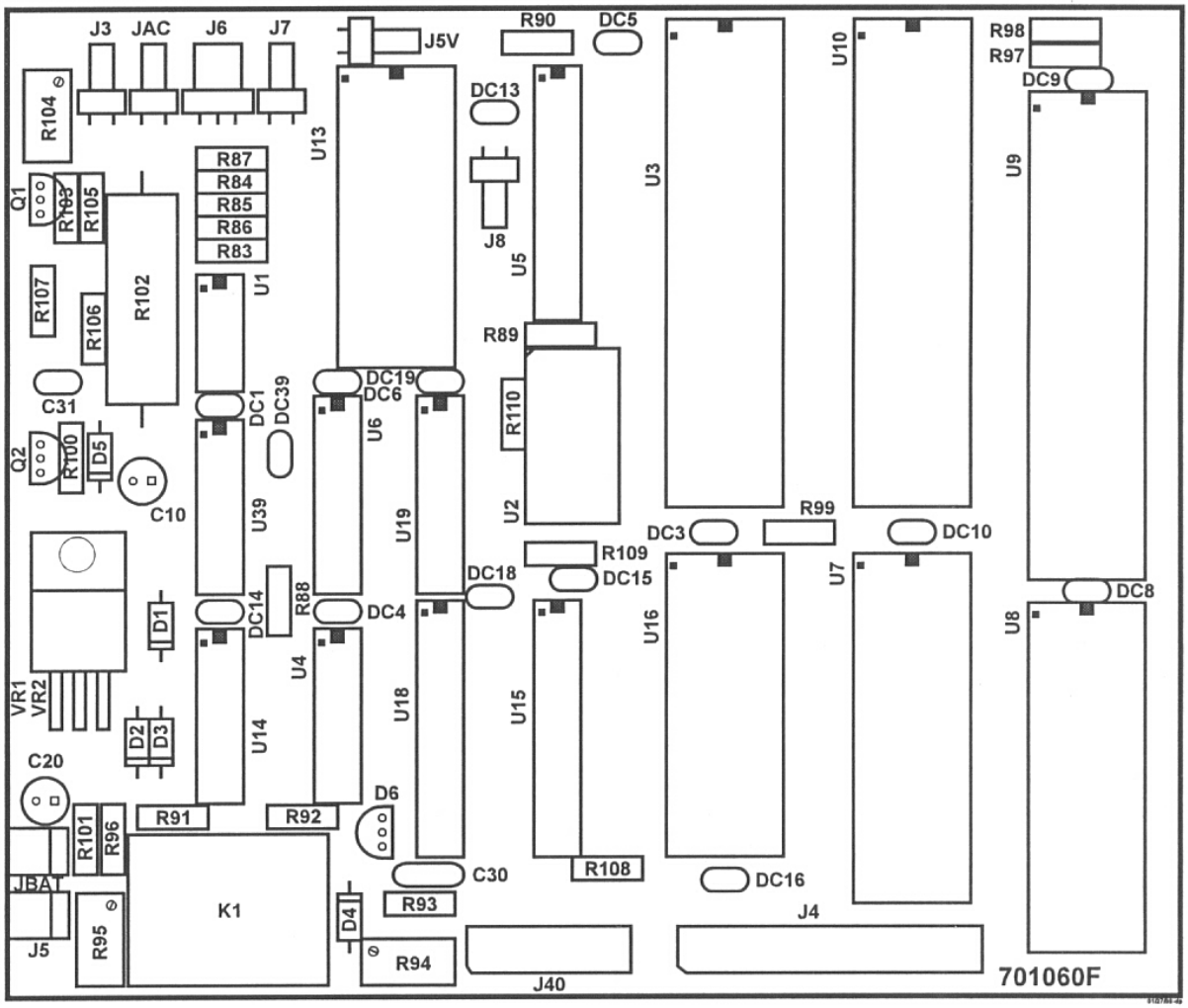
MAIN BOARD SCHEMATIC



SCHEMATIC – POWER SECTION


JAC
+6V
D2
1N4004
D3
1N4004
J5
SW1
+6V
VR1
LM2940
IN
OUT
GND
+5V
C20
47uF
R102
2.7 OHMS
2W
AC ON
D1
1N4004
C30
2200 uF
D4
1N4004
COM
NC
NO
K1
RELAY SPDT
J5V
HEADER2
(SPO2 POWER)
VR2
LM2940
JBATT
R103
1K
R105
10K
R100
15 OHMS
R104
50K
J3
SW2
C31
.1uF
Q1
2N3904
D5
1N4148
Q2
MPSA13
C10
47uF
Tant.
R106
1K
R107
1.5K
R101
4.7K
R95
10K
LO BATT
(U18-6)
R96
0 OHMS
PACE TECH INC
510 GARDEN AVE N
CLEARWATER, FL 33755
Title
SCHEMATIC: 530 POWER SUPPLY SECTION
Size
Custom
Document Number
701-060-521
Rev
F
Date: Monday, February 01, 1999
Sheet 1 of 2

MAIN BOARD COMPONENT LAYOUT

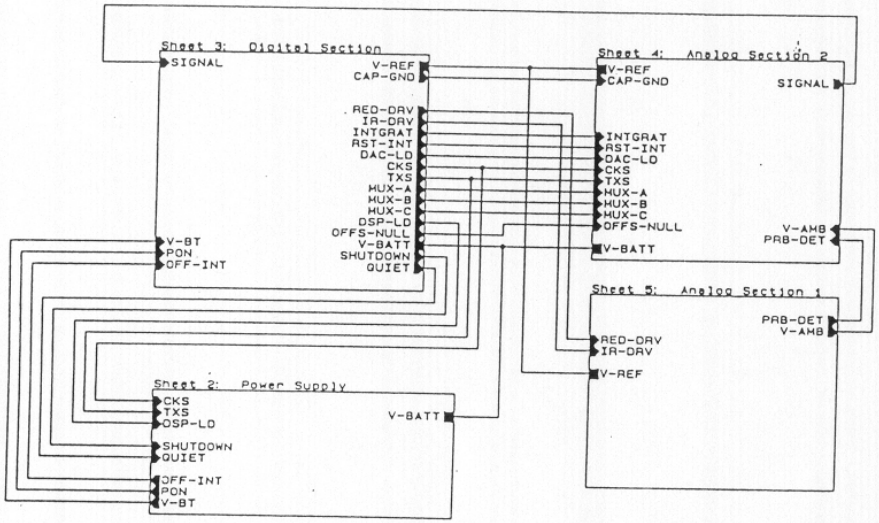


530 MAIN BOARD COMPONENT LAYOUT

MAIN BOARD PARTS LIST

701-060-521 (530) REV. F

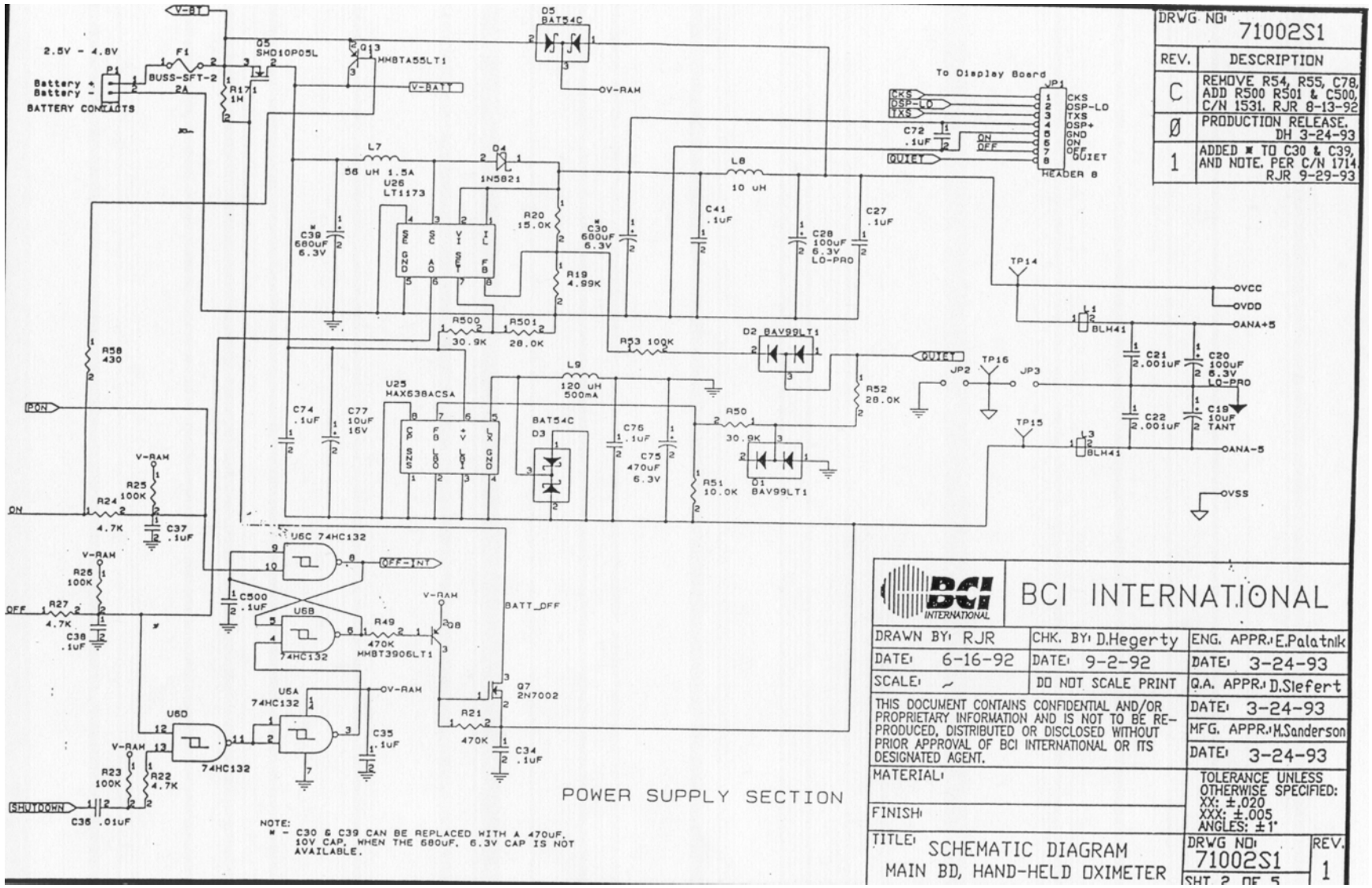
PART NUMBER	DESCRIPTION	QTY.	F. DESIGNATION
101-118-004	CAP **0.1uF** 50V 20% 0.2 LS MONOLITHIC DIP	15	DC1,DC3, DC4, DC6, DC8, DC9, DC10, DC13, DC14, DC15, DC16, DC18, DC39, C31
101-136-002	CAP **47uF** 16V 20% RADIAL ELECTROLYTIC	2	C10, C20
101-148-002	CAP **2200uF** 16V 20% RADIAL ELECTROLYTIC	1	C30
102-000-000	RES **0 OHM** .25W 5% CF	1	R96
102-103-005	RES **2.7 OHMS** 5W 5% SILICONE WW	1	R102
102-121-001	RES **15 OHMS** .25W 5% CF	1	R100
102-130-001	RES **75 OHMS** .25W 5% CF	1	R91
102-156-001	RES **1K** .25W 5% CF	2	R103, R106
102-159-001	RES **1.5K** .25W 5% CF	1	R107
102-170-001	RES **4.7K** .25W 5% CF	2	R87, R101
102-171-001	RES **5.1K** .25W 5% CF	1	R86
102-183-002	RES **10K** .25W 5% MF	11	R83, R88, R89, R90, R95, R97, R98, R99, R105, R108, R110
102-191-001	RES **22K** .25W 5% CF	3	R84, R85, R109
102-203-001	RES **51K** .25W 5% CF	1	R92
102-213-001	RES **110K** .25W 5% CF	1	R93
103-104-002	POT **50K** 10 TURN UP POTENTIOMETER	2	R94, R104
104-101-001	TRA **MPSA13** NPN TRANSISTOR	1	Q2
104-103-001	TRA **2N3904** NPN TRANSISTOR	1	Q1
105-104-001	CRY **11.0592 Mhz** OSCILLATOR	1	U2
107-101-001	DIO **1N4148** SIGNAL DIODE	1	D5
107-103-001	DIO **1N4004** RECTIFIER DIODE	4	D1, D2, D3, D4
107-104-001	DIO **LM385BYZ** ADJUSTABLE ZENER DIODE	1	D6
201-101-001	REL **TAKAMISAWA** SPDT RELAY LZ-5H-C	1	K1
204-102-001	REG **LM2940CT** 5V REGULATOR	2	VR1, VR2
302-003-001	IC **27C512-15** EPROM	1	U7
302-012-001	IC **62256A** STATIC RAM	1	U8
303-006-001	IC **82C55 or D71055C** PROG. INTERFACE	2	U9, U10
303-016-002	IC **80C320** MICROPROCESSOR	1	U3
305-005-001	IC **ADC0844BCN** A/D CONVERTER	1	U18
305-012-001	IC **82C54 or D71054C** PROG. TIMER 8MHz	1	U13
305-014-001	IC **DS1232** POWER ON RESET	1	U1
305-017-001	IC **ULN2003** 7 CHANNEL INPUT DRIVER	1	U19
305-058-001	IC **DS12887** 128 BYTE TIMER	1	U16
308-017-001	IC **74LS74AN** FLIP FLOP	2	U14, U39
308-019-001	IC **74HC7001** HEX SCHMIDT TRIGGER	1	U4
308-021-002	IC **74LS373** LATCH	1	U5
308-025-001	IC **74HCT244** BUFFER	1	U15
308-028-002	IC **74LS138** DECODER	1	U6
402-031-002	CON **2 PIN** HEADER WITH LOCK	7	J3, J5, J5V, J7, J8, JBATT, JAC
402-033-002	CON **3 PIN** HEADER WITH LOCK	1	J6
*	CON **14 PIN** HEADER cut from 403-021-001	1	J40
403-020-005	CON **26 PIN** HEADER cut from 403-021-001	1	J4
701-060-001	PCB **530 MAIN BOARD** REV.F	1	



DRWG NO: 71002S1	
REV.	DESCRIPTION
C	OFF-INT WAS /RESET PER C/N 1531. RJR 8-13-92
Ø	PRODUCTION RELEASE. DH 3-24-93
1	SEE SHEET 2, PER C/N 1714. RJR 9-29-93

BCI INTERNATIONAL

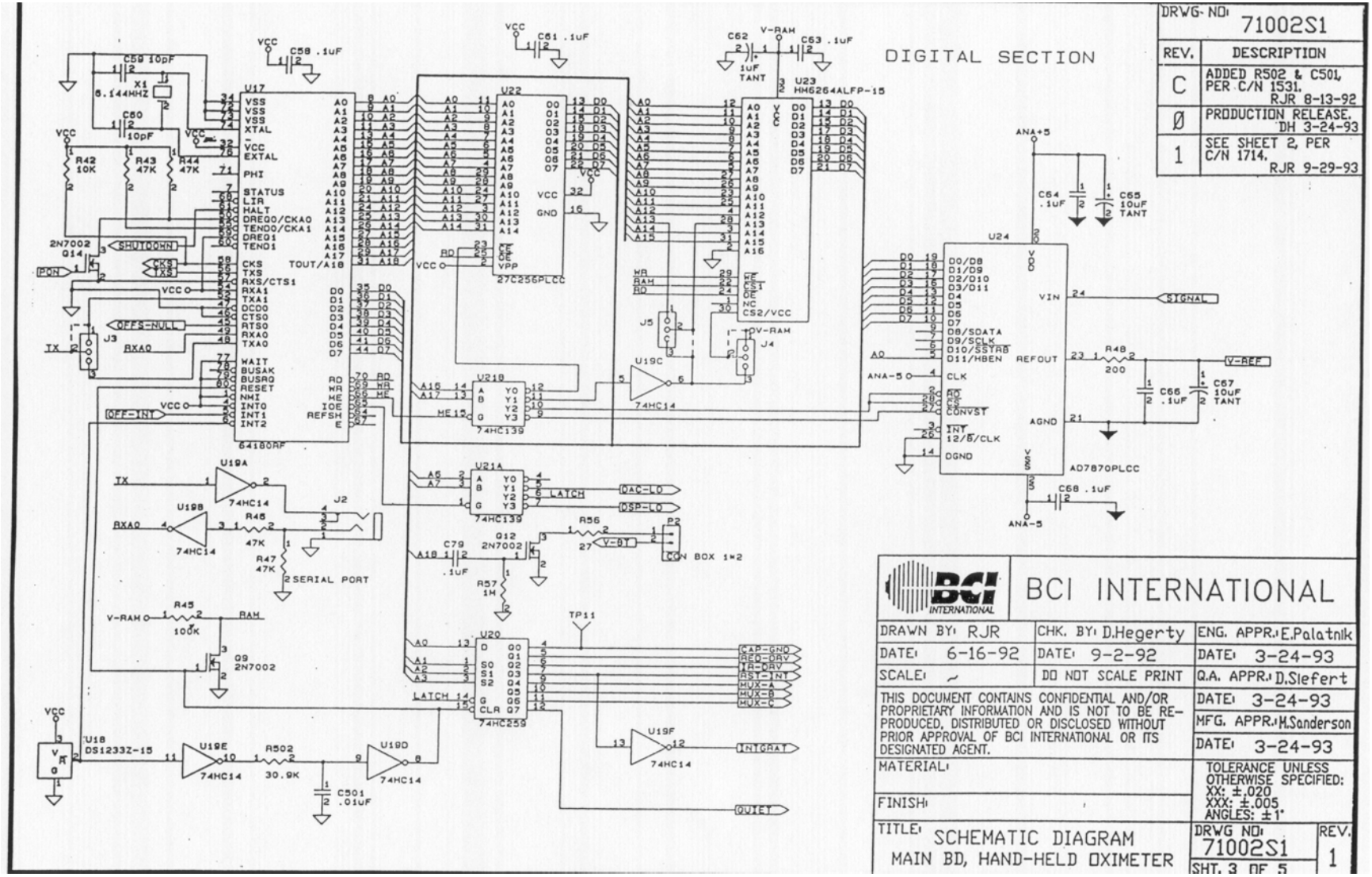
DRAWN BY: RJR	CHK. BY: D.Hegerty	ENG. APPR.: E.Palatnik
DATE: 6-16-92	DATE: 9-2-92	DATE: 3-24-93
SCALE: ~	DO NOT SCALE PRINT	Q.A. APPR.: D.Slefert
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE RE-PRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.		DATE: 3-24-93
		MFG. APPR.: M.Sanderson
		DATE: 3-24-93
MATERIAL:		TOLERANCE UNLESS OTHERWISE SPECIFIED: XX: ±.020 XXX: ±.005 ANGLES: ±1°
FINISH:		
TITLE: SCHEMATIC DIAGRAM MAIN BD, HAND-HELD OXIMETER	DRWG NO: 71002S1	REV. 1
	SHT. 1 OF 5	



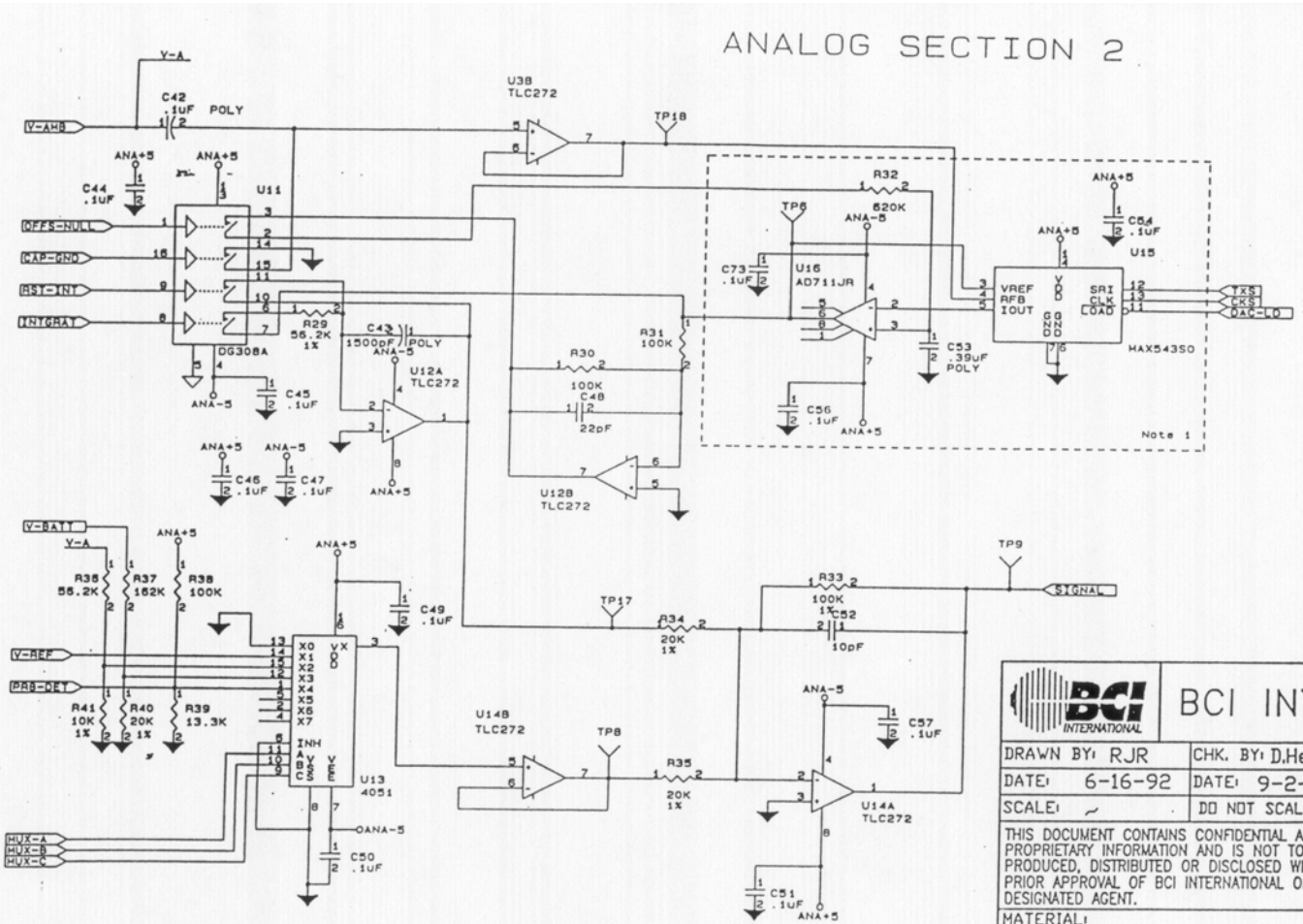
DRWG NO: 71002S1	
REV.	DESCRIPTION
C	REMOVE R54, R55, C78, ADD R500 R501 & C500, C/N 1531. RJR 8-13-92
Ø	PRODUCTION RELEASE. DH 3-24-93
1	ADDED W TO C30 & C39, AND NOTE. PER C/N 1714. RJR 9-29-93

BCI INTERNATIONAL

DRAWN BY: RJR	CHK. BY: D.Hegerty	ENG. APPR.: E.Palatnik
DATE: 6-16-92	DATE: 9-2-92	DATE: 3-24-93
SCALE: ~	DO NOT SCALE PRINT	Q.A. APPR.: D.Siefert
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE RE-PRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.		DATE: 3-24-93
		MFG. APPR.: M.Sanderson
		DATE: 3-24-93
MATERIAL:		TOLERANCE UNLESS OTHERWISE SPECIFIED: XX: ±.020 XXX: ±.005 ANGLES: ±1°
FINISH:		
TITLE: SCHEMATIC DIAGRAM MAIN BD, HAND-HELD OXIMETER		DRWG NO: 71002S1 REV. 1
		SHT 2 OF 5


DIGITAL SECTION
DRWG. NO. 71002S1
REV. | DESCRIPTION
C | ADDED R502 & C501, PER C/N 1531. RJR 8-13-92
Ø | PRODUCTION RELEASE. DH 3-24-93
1 | SEE SHEET 2, PER C/N 1714. RJR 9-29-93
BCI INTERNATIONAL
DRAWN BY: RJR | CHK. BY: D.Hegerty | ENG. APPR.: E.Palatnik
DATE: 6-16-92 | DATE: 9-2-92 | DATE: 3-24-93
SCALE: ~ | DO NOT SCALE PRINT | Q.A. APPR.: D.Siefert
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE RE-PRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.
DATE: 3-24-93
MFG. APPR.: H.Sanderson
DATE: 3-24-93
MATERIAL:
FINISH:
TOLERANCE UNLESS OTHERWISE SPECIFIED: XX: ±.020 XXX: ±.005 ANGLES: ±1°
TITLE: SCHEMATIC DIAGRAM MAIN BD, HAND-HELD OXIMETER
DRWG NO: 71002S1
REV. 1
SHT. 3 OF 5

ANALOG SECTION 2

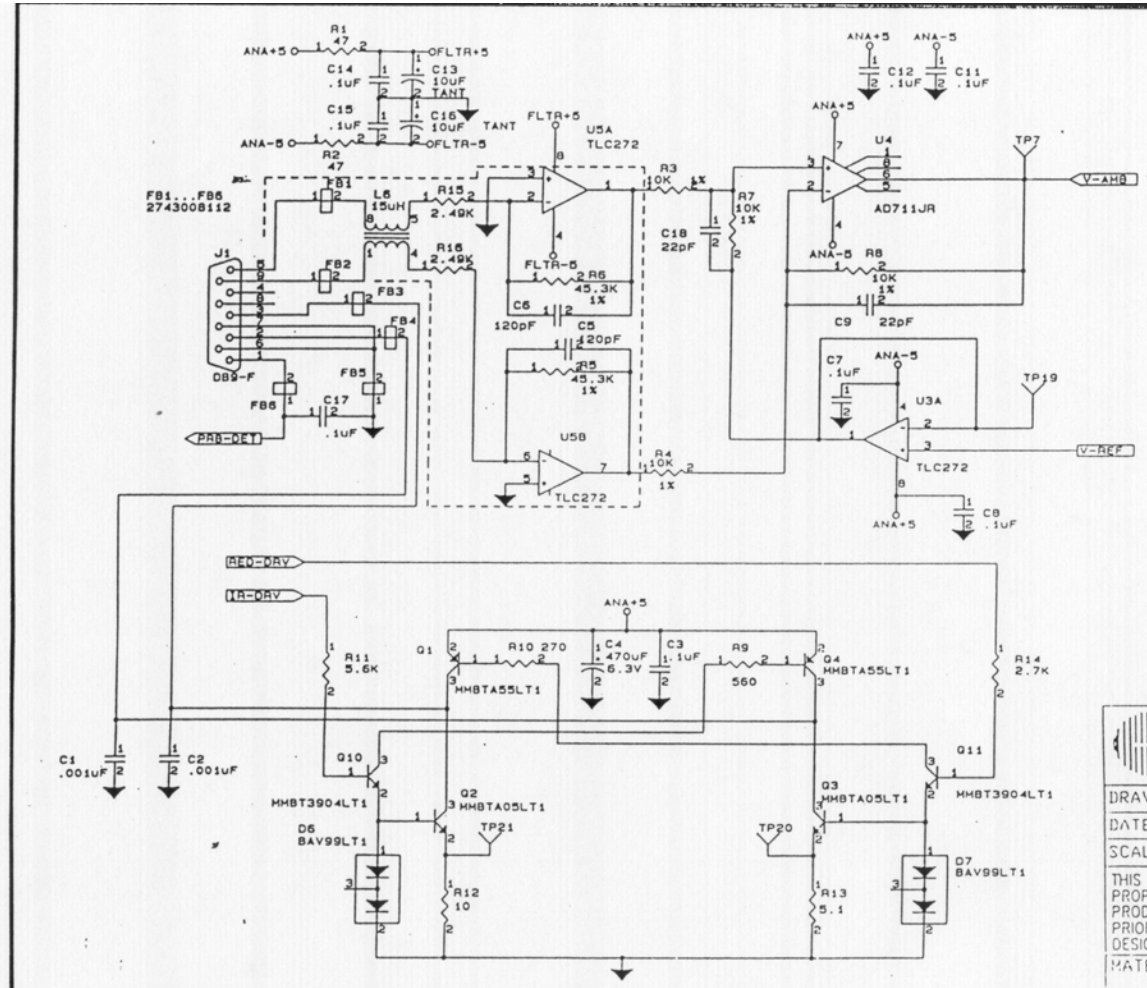


Note 1: Layout close to each other

DRWG NO: 71002S1	
REV.	DESCRIPTION
C	NO CHANGE THIS PAGE, PER C/N 1531. RJR 8-13-92
Ø	PRODUCTION RELEASE. DH 3-24-93
1	SEE SHEET 2, PER C/N 1714. RJR 9-29-93

BCI INTERNATIONAL

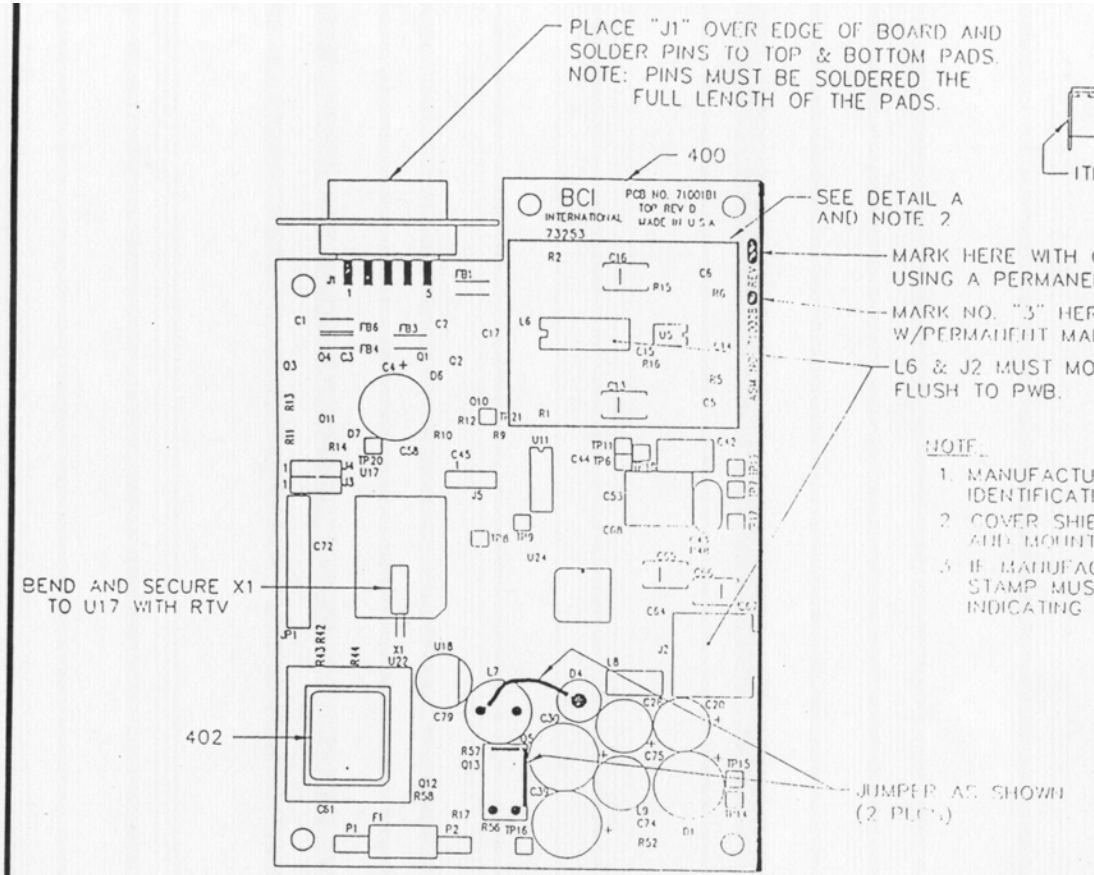
DRAWN BY: RJR	CHK. BY: D.Hegerty	ENG. APPR.: E.Palatnik
DATE: 6-16-92	DATE: 9-2-92	DATE: 3-24-93
SCALE: ~	DO NOT SCALE PRINT	Q.A. APPR.: D.Siefert
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE RE-PRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.		DATE: 3-24-93
		MFG. APPR.: M.Sanderson
		DATE: 3-24-93
MATERIAL:		TOLERANCE UNLESS OTHERWISE SPECIFIED: XX: ±.020 XXX: ±.005 ANGLES: ±1°
FINISH:		
TITLE: SCHEMATIC DIAGRAM MAIN BD, HAND-HELD OXIMETER		DRWG NO: 71002S1 REV. 1
		SHT. 4 OF 5



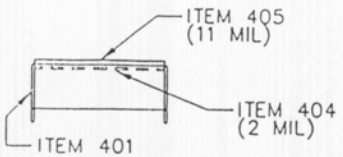
DRWG NO: 71002S1	
REV.	DESCRIPTION
C	NO CHANGE THIS PAGE, PER C/N 1531. RJR 8-13-92
Ø	PRODUCTION RELEASE. DH 3-24-93
1	SEE SHEET 2, PER C/N 1714. RJR 9-29-93

BCI INTERNATIONAL

DRAWN BY: RJR	CHK. BY: D.Hegerty	ENG. APPR.: E.Palatnik
DATE: 6-16-92	DATE: 9-2-92	DATE: 3-24-93
SCALE: ~	DO NOT SCALE PRINT	Q.A. APPR.: D.Siefert
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE RE-PRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.		DATE: 3-24-93
		MFG. APPR.: H.Sanderson
		DATE: 3-24-93
MATERIAL:		TOLERANCE UNLESS OTHERWISE SPECIFIED: XX: ±.020 XXX: ±.005 ANGLES: ±1°
FINISH:		
TITLE: SCHEMATIC DIAGRAM MAIN BD, HAND-HELD OXIMETER		DRWG NO: 71002S1 REV. 1 SHT. 5 OF 5


PLACE "J1" OVER EDGE OF BOARD AND SOLDER PINS TO TOP & BOTTOM PADS. NOTE: PINS MUST BE SOLDERED THE FULL LENGTH OF THE PADS.
400
SEE DETAIL A AND NOTE 2
MARK HERE WITH CURRENT REVISION USING A PERMANENT MARKER.
MARK NO. "3" HERE W/PERMANENT MARKER.
L6 & J2 MUST MOUNT FLUSH TO PWB.
BEND AND SECURE X1 TO U17 WITH RTV
402
JUMPER AS SHOWN (2 PLCS.)
BCI INTERNATIONAL
PCB NO. 71001B1
TOP REV D
MADE IN U.S.A.
73253

TOP VIEW OF BOARD



DETAIL A

DRWG NO: 71002B3

REV.	DESCRIPTION
6	ADDED MANUFACTURER TO 09 & 012. ECR 791 BAE 1-10-95
7	REVISED TO REFLECT REV.D ARTWORK. ECR 846 DRH 2-8-95
8	SEE SHEET 2. BAE 3-6-95
9	REVISED BOARD MARKING NOTE. ADDED BCI PART AS ALTERNATE FOR U15 SHT 4. FOR REVS PRIOR TO 6 SEE HISTORY FILE. CCN 2113 KHF 7-20-95

NOTE:

1. MANUFACTURER TO PLACE A "MFD BY" IDENTIFICATION MARK ON BOARD.
2. COVER SHIELD ITEM 401 TO BE ASSEMBLED AND MOUNTED BY VENDOR.
3. IF MANUFACTURER TESTS BOARDS A TEST STAMP MUST BE PLACED ON THE BOARD INDICATING IT PASSED ALL TESTS.

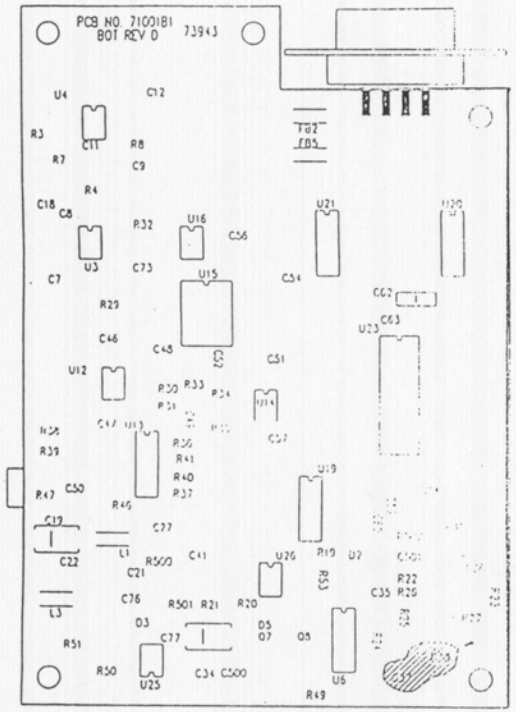
UNPOPULATED SPACES ON BOARD ARE C34,C36,R17,R19,R20,R21,R27,R49,R53, R58,R500,R501,D2,D4,L7,U26,Q5,Q7,Q8, Q13,Q14.

SHEETS 3-4 "A" SIZE (BOM)

BCI INTERNATIONAL

DRAWN BY: RJR	CHK. BY: D.Hegerty	ENG. APPR.: E.Palatnik	
DATE: 9-28-92	DATE: 3-24-93	DATE: 3-24-93	
SCALE: NTS	DO NOT SCALE PRINT	Q.A. APPR.: D.Siefert	
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE RE-PRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.		DATE: 3-24-93	
		MFG. APPR.: M.Sanderson	
		DATE: 3-24-93	
MATERIAL:		TOLERANCE UNLESS OTHERWISE SPECIFIED: XX: ±.020 XXX: ±.005 ANGLES: ±2°	
FINISH:			
TITLE: PWB ASM OXIMETRY (OEM)		DRWG NO: 71002B3	REV 9
		SHT. 1 OF 4	

DRWG NO: 71002B3	
REV.	DESCRIPTION
6	NO CHANGE THIS PAGE. BAE 1-10-95
7	SEE SHEET 1. DRH 2-8-95
8	ADD HOT GLUE TO C37,38. C/N 2013 BAE 3-6-95
9	SEE SHEET 1. KMF 7-20-95



BOTTOM VIEW OF BOARD

SEAL C37 & C38 WITH HOT MELT GLUE

BCI INTERNATIONAL

DRAWN BY: RJR	CHK. BY: D.Hegerty	ENG. APPR.: E.Polotnik	
DATE: 9-28-92	DATE: 3-24-93	DATE: 3-24-93	
SCALE: RJR	DO NOT SCALE PRINT	Q.A. APPR.: D.Siefert	
THIS DOCUMENT CONTAINS CONFIDENTIAL AND/OR PROPRIETARY INFORMATION AND IS NOT TO BE RE-PRODUCED, DISTRIBUTED OR DISCLOSED WITHOUT PRIOR APPROVAL OF BCI INTERNATIONAL OR ITS DESIGNATED AGENT.		DATE: 3-24-93	
		MFG. APPR.: M.Sanderson	
		DATE: 3-24-93	
MATERIAL:		TOLERANCE UNLESS OTHERWISE SPECIFIED: XX: ±.020 XXX: ±.005 ANGLES: ±2°	
FINISH:			
TITLE: PWB ASM OXIMETRY (OEM)		DRWG NO: 71002B3	REV. 9
		SHT. 2 OF 4	

71002B3-PWB ASM OEM

REV. 9 7-20-95

G. Spo2 SURFACE MOUNT COMPONENTS

DESCRIPTION	QTY	DESIGNATION(S)	MANUFACTURER'S PART NO.
CAP X7R .001uF 50V 10%	4	C1,C2,C21,C22	1206 PACKAGE (ANY MFR.)
CAP X7R .1uF 50V 10%	35	C3,C7,C8,C11,C12,C14,C15, C17,C27,C35,C37,C38,C41, C44,C45,C46,C47,C49,C50, C51,C54,C56,C57,C58,C61, C63,C64,C66,C68,C72,C73, C74,C76,C79,C500	
CAP COG 120pF 50v 5%	2	C5, C6	1206 PACKAGE (ANY MFR.)
CAP COG 22pF 50v 5%	3	C9, C18, C48	1206 PACKAGE (ANY MFR.)
CAP TANT 10uF 16V 10%	6	C13,C16,C19,C65,C67,C77	6032 PACKAGE (ANY MFR.)
CAP X7R .01uF 100V 10%	1	C501	1206 PACKAGE (ANY MFR.)
CAP COG 10pF 50V 10%	3	C52, C59, C60	1206 PACKAGE (ANY MFR.)
CAP TANT 1uF 16V 10%	1	C62	3216 PACKAGE (ANY MFR.)
DIODE DUAL 200mA 30V	2	D3, D5	BAT54C PHILIPS/AMPEREX
DIODE DUAL HIGH SPEED SW	3	D1, D6, D7	BAV99LT1 MOTOROLA
FUSE FAST-ACT 2A 125V	1	F1	7243 PACKAGE (ANY MFR.)
FITER FERRITE SUPPRESS. 80 ohm (IMP) @ 100MHz 500mA	8	FB1, FB2, FB3, FB4, FB5, FB6, L1, L3	BLM41A01PT (ANY MFR.)
FILTER COMMON MODE 15mH 1:1 TURN RATIO DIP PACK	1	L6	500-1579 B.H. ELEC.
INDUCTOR 10 uH 250mA 10%	1	L8	1812 PACKAGE (ANY MFR.)
TRAN PNP 500mA 60V	2	Q1, Q4	MMBTA55LT1 MOTOROLA
TRAN NPN 500mA 60V	2	Q2, Q3	TMPTA05LT ALLEGRO
TRAN NPN 200mA 350mW 40v	2	Q10, Q11	MMBT3904LT1 MOTOROLA
FET 60V 0.5A	2	Q9, Q12	2N7002LT1 MOTOROLA 2N7002LT1 NATIONAL
RESISTOR 5% 1/8W 47 ohm	2	R1,R2	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 10K	7	R3,R4,R7,R8,R41,R42,R51	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 45.3K	2	R5, R6	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 560 ohm	1	R9	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 270 ohm	1	R10	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 5.6K	1	R11	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 10 ohm	1	R12	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 5.1 ohm	1	R13	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 2.7K	1	R14	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 2.49K	2	R15, R16	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 1M	1	R57	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 4.7K	2	R22, R24	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 100K	8	R23, R25, R26, R30, R31, R33, R38, R45	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 56.2K	2	R29, R36	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 620K	1	R32	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 20K	3	R34, R35, R40	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 162K	1	R37	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 13.3K	1	R39	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 47K	4	R43, R44, R46, R47	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 200 ohm	1	R48	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 30.9K	2	R50, R502	1206 PACKAGE (ANY MFR.)
RESISTOR 1% 1/8W 28K	1	R52	1206 PACKAGE (ANY MFR.)
RESISTOR 5% 1/8W 27 ohm	1	R56	1206 PACKAGE (ANY MFR.)

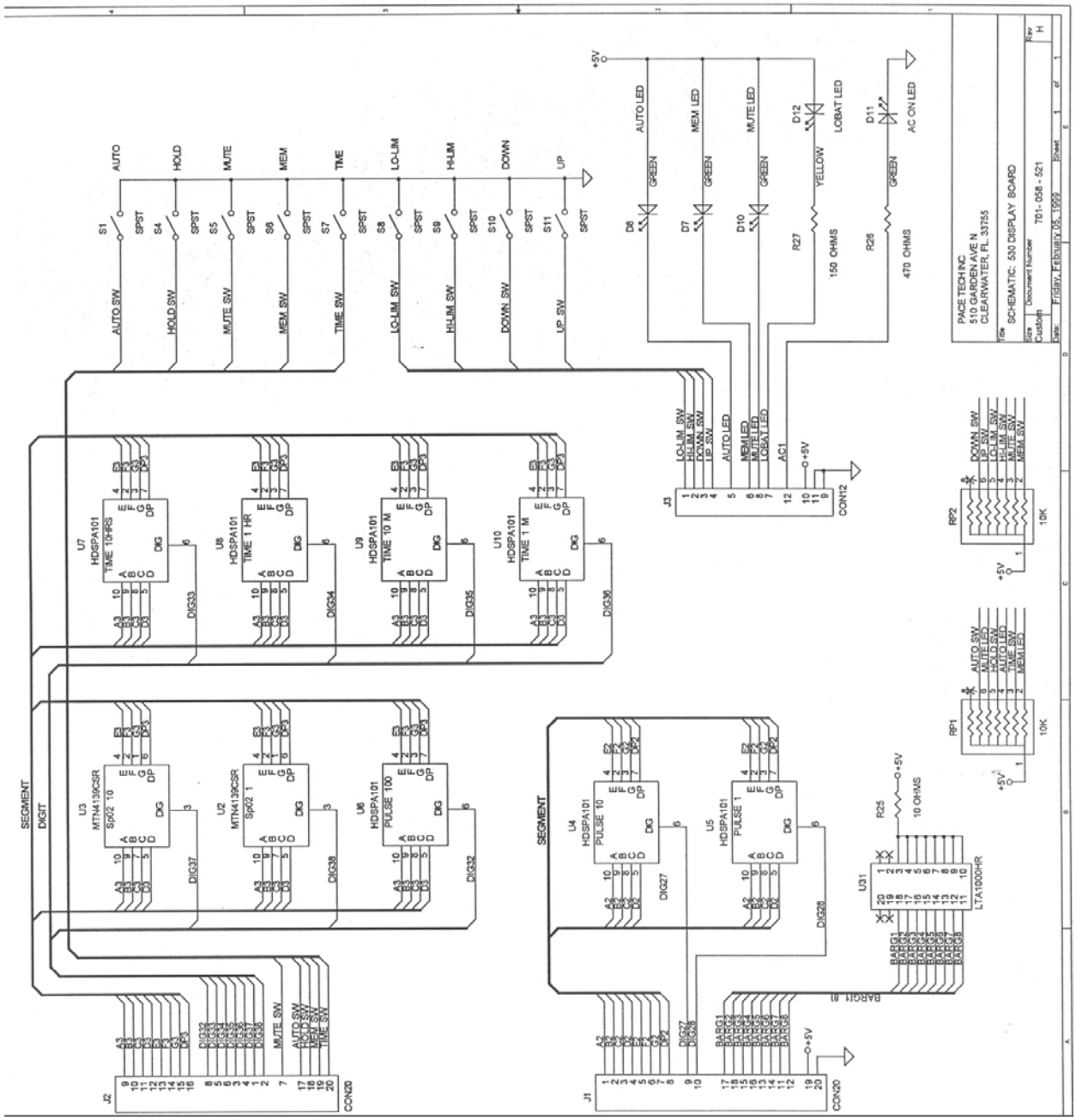
DESCRIPTION	QTY	DESIGNATION(S)	MANUFACTURER'S PART NO.
SOCKET 32 POS. PLCC	1	U22	821977-1 AMP
IC EPROM 27C256 SMD	1	U22	BCI P/N 71021B1
IC DUAL OP AMP	4	U3, U5, U12, U14	TLC272CD TEXAS INST.
IC AD711JR	2	U4, U16	AD711JR ANALOG DEVICES
IC QUAD 2 INPUT NAND GATE	1	U6	MC74HC132AD MOTOROLA
IC SPST CMOS	1	U11	DGG308ACY HARRIS,SILICON.
IC MULTI/DEMULTIPLEXER	1	U13	MC14051BD MOTOROLA
IC 12BIT SERIAL INPUT, DAC	1	U15	MAX543BCWE MAXIM or 72032B1 BCI INTERNATIONAL
IC 8BIT CMOS MPU 8MHz	1	U17	HD64180RF-8 HITACHI
IC TRIGGER INVERTER	1	U19	MC74HC14AD MOTOROLA
IC 8BIT ADDRESSABLE	1	U20	MC74HC259D MOTOROLA or CD74HC259M HARRIS
IC DECODER/DEMULTIPLEX.	1	U21	MC74HC139AD MOTOROLA
IC 8Kx8 CMOS SRAM 100nS	1	U23	HM6264ALFP-15T HITACHI
IC 12BIT A/D CONVERTER	1	U24	AD787OJP ANALOG DEVICE
IC +5V ADJUSTABLE CMOS	1	U25	MAX638ACSA MAXIM

THRU HOLE COMPONENTS & MISCELLANEOUS

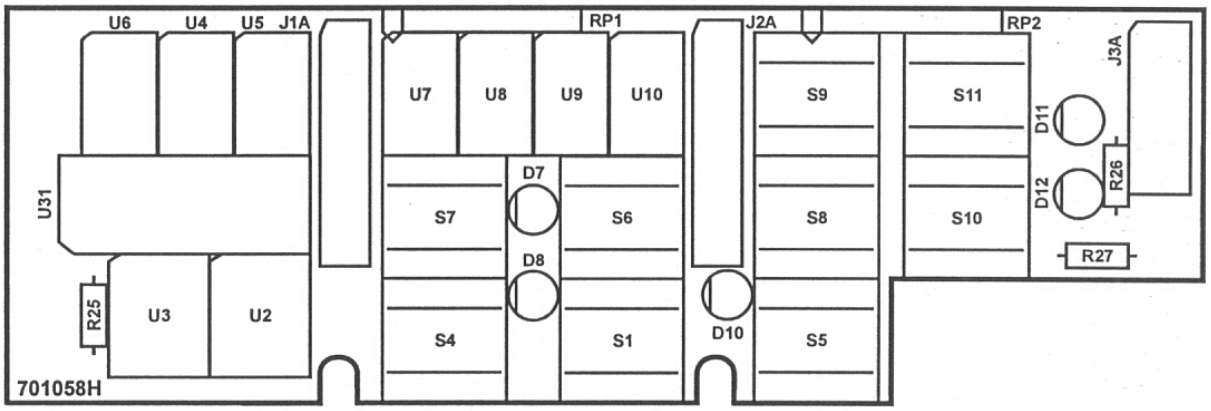
DESCRIPTION	QTY	DESIGNATION(S)	MANUFACTURER'S PART NO.
CAP LOW/IMP 470uF 10V 20%	2	C4, C75	ECA-1AFQ471 PANASONIC
CAP LOW/PRO 100uF 6V 20%	2	C20, C28	107R22025M ILLINOIS CAP.
CAP LOW/IMP 680uF 6.3V 20% Or 470uF 10V NOT TO EXCEED 13mm IN HEIGHT	2	C30, C39	ECAOJFQ681 PANASONIC
CAP STA/METAL .1uF 50V 5%	2	C42	ECQ-V1H104JZ3 PANASONIC
CAP P/FLM .0015uF 100V 10%	1	C43	QYA2A152KTP NICHICON
CAP STA/METAL .39uF 50V 5%	1	C53	ECQ-V1H3393JZ PANASONIC
IC 5V ECONORESET	1	U18	DS1233Z-15 DALLAS SEMI.
INDUCTOR RAD 120uH 0.5A	1	L9	BCI P/N 71049B2
CRYSTAL 6.11MHz	1	X1	FX3-6.144MHz FOX ELEC.
TEST POINT PC MOUNT	13	TP6, TP7, TP8, TP9, TP11, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP21	TP-103-03 COMPONENTS CO.
HEADER .100 2 POSITION	2	P1, P2	103321-2 AMP
RECEPTACLE 9 POSITION	1	J1	DB9-F 747905-2 AMP
JACK STEREO 3.5mm	1	J2	16PJ108 MOUSER
SOCKET .100 8 POS. SIP	1	JP1	744-8 T&B ANSLEY or CES-108-01-T-S SAMTEC
22 GAUGE HOOK-UP WIRE	A/R	JUMPER	ANY (AS REQUIRED)
PWB FAB (Rev D. films)	1	400	BCI P/N71001B1(Rev. 1 Drawing)
COVER SHIELD NEWOX1	1	401	BCI P/N71017B1
SOFTWARE ASM	1	402	*-BCI P/N 71029A3
BARRIER INSULATING 2 MIL	1	404	*-BCI P/N 20511B1
BARRIER INSULATING 11 MIL	1	405	*-BCI P/N 20511B2
GLUE, HOT MELT (FULLER)	1/R	406	HM-2124-10

*- INDICATES SUPPLIED BY BCI

DISPLAY BOARD SCHEMATIC



DISPLAY BOARD COMPONENT LAYOUT



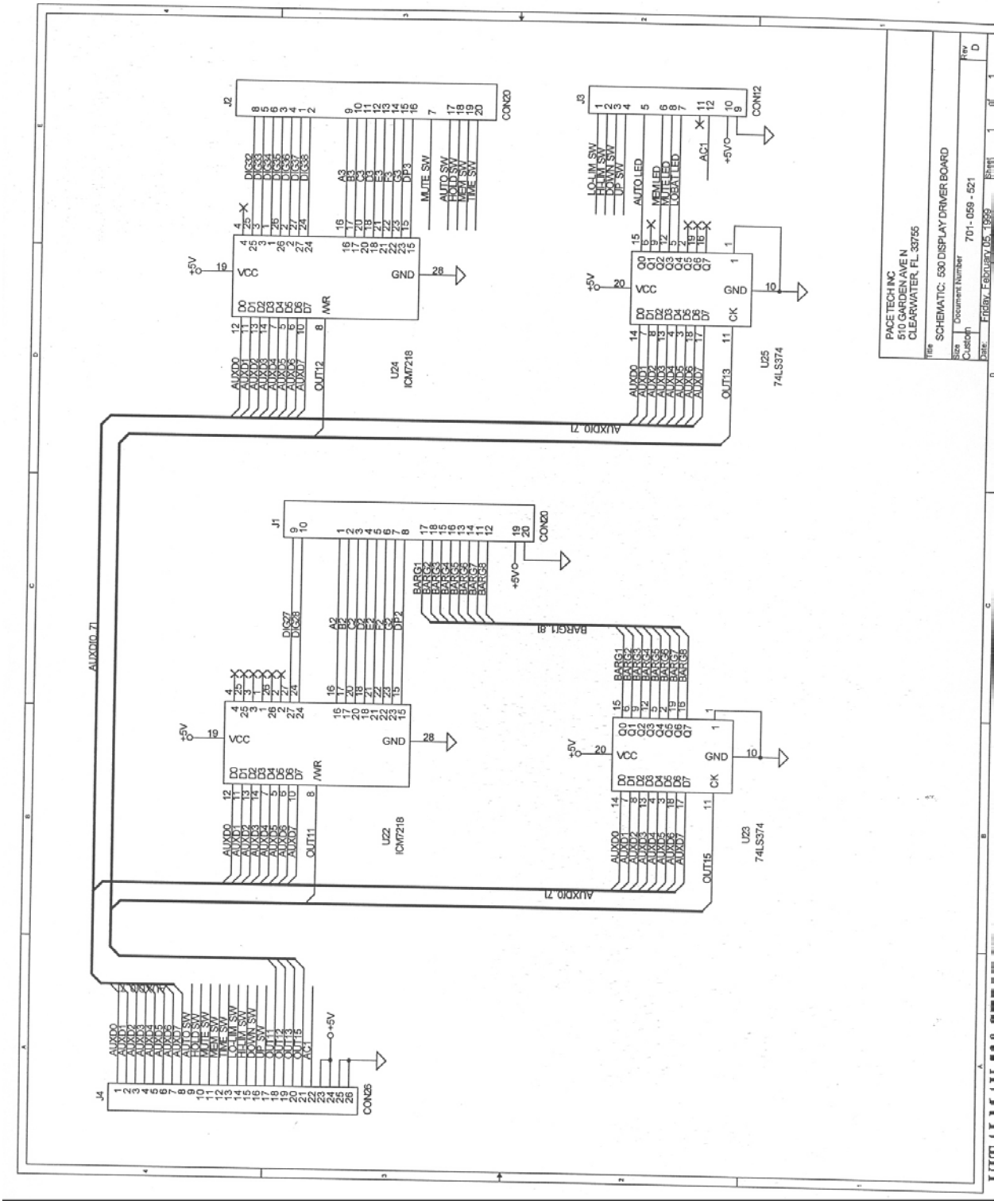
530 DISPLAY BOARD COMPONENT LAYOUT

530 DISPLAY BOARD PARTS LIST

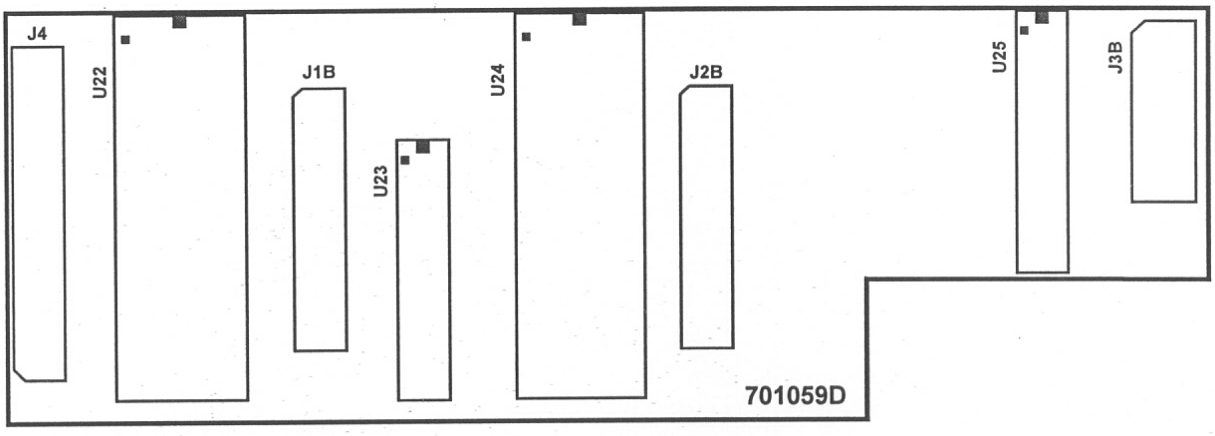
(701- 058 - 521) REV. H

PART NUMBER	DESCRIPTION	QTY.	REFERENCE
102-115-001	**10 OHMS** .25W 5% CF	1	R25
102-135-001	**150 OHMS** .25W 5% CF	1	R27
102-147-001	**470 OHMS** .25W 5% CF	1	R26
109-102-002	**HDSP-H103** DSP LED 1 DIGIT RED E-	7	U4, U5, U6, U7, U8, U9, U10
109-106-001	**DSP LED BARGRAPH** LTA1000HR	1	U31
109-107-001	**MTN4139CSR** DSP LED 1DIGIT .39"	2	U2, U3
109-123-001	**LED DSP GREEN LED** 2X5MM	4	D7, D8, D10, D11
109-123-002	**LED DSP YELLOW LED** 2X5MM	1	D12
202-118-001	**SPST SWITCH 12X12MM** B3F4050	9	S1, S4, S5, S6, S7, S8, S9, S10, S11
202-119-007	**SWI BUTTON WHITE** CDS7 SERIES	9	S1, S4, S5, S6, S7, S8, S9, S10, S11
205-103-001	**RPK 10K** 8PIN SIP BUSSED	2	RP1, RP2
*	**CON12** 12 PIN HEADER	1	J3
*	**CON20** 20PIN HEADER	2	J1, J2
*	Cut from 402-021-001 (40 pin header)		
701-058-001	**PCB 530 DISPLAY BOARD** REV.H	1	

DRIVER BOARD SCHEMATIC



DRIVER BOARD COMPONENT LAYOUT



530 DISPLAY DRIVER COMPONENT LAYOUT

530 DISPLAY DRIVER BOARD PARTS LIST
(701-059- 521) REV. D

H. PART NUMBER	DESCRIPTION	QTY.	REFERENCE
308-018-001	**IC ICM7218DIPI** DISPLAY DRIVER	2	U22, U24
308-024-002	**IC 74LS374** LATCH	2	U23, U25
403-020-005	**CON26** 26 PIN HEADER	1	J4
403-022-001	**CON20** 20 PIN RECEPTACLE HEADER	2	J1, J2
403-022-005	**CON12** 12 PIN RECEPTACLE HEADER	1	J3
701-059-001	**PCB 530 DISPLAY DRIVER** REV.D	1	